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What is claimed is:

1. A lead electrode assembly for subcutaneous
implantation comprising:

an electrode;

10 a riser coupled to the electrode; and

a head coupled to the riser.

2. The lead electrode assembly of claim 1, wherein the
riser comprises a metallic material.

3. The lead electrode assembly of claim 2, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

4. The lead electrode assembly of claim 1, wherein the
riser comprises a polymeric material.

5. The lead electrode assembly of claim 4, wherein the
25 polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a

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5 polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

6. The lead electrode assembly of claim 1, wherein the head comprises a metallic material.

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7. The lead electrode assembly of claim 6, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

8. The lead electrode assembly of claim 1, wherein the head comprises a polymeric material.

9. The lead electrode assembly of claim 8, wherein the polymeric material is selected from the group consisting essentially of a polyurethane, a polyamide, a polyetheretherketone (PEEK), a polyether block amide (PEBA), a polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

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10. The lead electrode assembly of claim 1, wherein the riser is substantially planar.

5 11. The lead electrode assembly of claim 1, wherein the
riser is substantially perpendicular to the electrode.

 12. The lead electrode assembly of claim 1, wherein the
riser is substantially centered over the electrode.

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 13. The lead electrode assembly of claim 1, wherein the
head is substantially planar.

 14. The lead electrode assembly of claim 1, wherein the
head is substantially perpendicular to the riser.

 15. The lead electrode assembly of claim 1, wherein the
riser is between approximately 1 mm and approximately 10 mm in
height.

 16. The lead electrode assembly of claim 15, wherein the
riser comprises a proximal end, a distal end, a top and a bottom
and wherein the proximal end is closer to the distal end at the
top of the riser than at the bottom of the riser.

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 17. The lead electrode assembly of claim 1, wherein the
electrode comprises a mesh of metallic material.

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5 18. The lead electrode assembly of claim 17, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

10 19. The lead electrode assembly of claim 1, wherein the
electrode comprises a substantially flat sheet of metallic
material.

20 20. The lead electrode assembly of claim 19, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

20 21. The lead electrode assembly of claim 1, wherein the
electrode is substantially planar.

22. The lead electrode assembly of claim 1, wherein the
electrode comprises at least one substantially planar surface.

25 23. The lead electrode assembly of claim 22, wherein the
at least one substantially planar surface has a surface area
between approximately 100 square millimeters and approximately
2000 square millimeters.

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27. The lead electrode assembly of claim 24, wherein the lead electrode assembly further comprises a connector coupled to the lead.

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5 30. The lead electrode assembly of claim 29, wherein the
lead is between approximately 5 cm and approximately 30 cm in
length.

 31. The lead electrode assembly of claim 30, wherein the
10 lead is between approximately 10 cm and approximately 20 cm in
length.

 32. The lead electrode assembly of claim 29, wherein the
lead length is one of a plurality of pre-set lengths.

 33. The lead electrode assembly of claim 32, wherein the
pre-set lengths vary by approximately 10 cm.

 34. The lead electrode assembly of claim 24, wherein the
120 lead has a proximal end and a distal end and wherein the
proximal end of the lead is coupled to the electrode.

 35. The lead electrode assembly of claim 34, wherein the
lead electrode assembly further comprises a lead fastener
25 coupled between the proximal end of the lead and the electrode.

5 36. The lead electrode assembly of claim 35, wherein the
riser is coupled to the electrode along an interface line
intersecting the lead fastener.

 37. The lead electrode assembly of claim 35, wherein the
10 riser is coupled to the electrode along an interface line and
wherein the lead is coupled to the lead fastener along a line of
the lead that is substantially parallel to the interface line.

 38. The lead electrode assembly of claim 37, wherein the
interface line and the line of the lead are the same line.

 39. The lead electrode assembly of claim 1, wherein the
length of the riser is between approximately 2 mm and
approximately 6 cm.

 40. The lead electrode assembly of claim 1, wherein the
length of the riser is less than the length of the electrode.

 41. The lead electrode assembly of claim 40, wherein the
25 riser is coupled to the electrode along an interface line and
the length of the riser and the length of the electrode are
measured along the interface line.

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5 42. The lead electrode assembly of claim 41, wherein the electrode has a proximal end and a distal end and wherein the riser is closer to the proximal end of the electrode than the distal end of the electrode.

10 43. The lead electrode assembly of claim 42, wherein the lead electrode assembly further comprises a lead, wherein the lead is coupled to the electrode closer to the distal end of the electrode than the proximal end of the electrode.

15 44. The lead electrode assembly of claim 43, wherein the lead electrode assembly further comprises a lead fastener coupled between the lead and the electrode.

20 45. The lead electrode assembly of claim 1, wherein the lead electrode assembly further comprises a foundation.

 46. The lead electrode assembly of claim 45, wherein a top surface of the foundation is coupled to a bottom of the riser.

25 47. The lead electrode assembly of claim 45, wherein a bottom surface of the foundation is coupled to and faces a top surface of the electrode.

5 48. The lead electrode assembly of claim 45, wherein the
lead electrode assembly further comprises a backing layer
coupled between the foundation and the electrode.

 49. The lead electrode assembly of claim 46, wherein the
10 backing layer comprises a polymeric material.

 50. The lead electrode assembly of claim 49, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

 51. The lead electrode assembly of claim 45, wherein the
20 lead electrode assembly further comprises a molded cover coupled
to the foundation and the electrode.

 52. The lead electrode assembly of claim 51, wherein the
molded cover at least partially covers a top surface of the
25 foundation.

5 53. The lead electrode assembly of claim 51, wherein the
molded cover comprises a skirt that partially covers a bottom
surface of the electrode.

 54. The lead electrode assembly of claim 51, wherein the
10 molded cover comprises a polymeric material.

 55. The lead electrode assembly of claim 54, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

 56. The lead electrode assembly of claim 45, wherein the
120 foundation is substantially planar.

 57. The lead electrode assembly of claim 45, wherein the
foundation is substantially parallel to the electrode.

25 58. The lead electrode assembly of claim 45, wherein the
foundation comprises a metallic material.

5 59. The lead electrode assembly of claim 58, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

10 60. The lead electrode assembly of claim 45, wherein the
foundation comprises a polymeric material.

61. The lead electrode assembly of claim 60, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

120 62. A lead electrode assembly for use with an implantable
cardioverter-defibrillator subcutaneously implanted outside the
ribcage between the third and twelfth ribs comprising:

an electrode;

a riser coupled to the electrode; and

25 a head coupled to the riser.

63. The lead electrode assembly of claim 62, wherein the
riser comprises a metallic material.

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64. The lead electrode assembly of claim 63, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

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65. The lead electrode assembly of claim 62, wherein the riser comprises a polymeric material.

66. The lead electrode assembly of claim 65, wherein the polymeric material is selected from the group consisting essentially of a polyurethane, a polyamide, a polyetheretherketone (PEEK), a polyether block amide (PEBA), a polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

67. The lead electrode assembly of claim 62, wherein the head comprises a metallic material.

68. The lead electrode assembly of claim 67, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

5 69. The lead electrode assembly of claim 62, wherein the
head comprises a polymeric material.

70. The lead electrode assembly of claim 69, wherein the
polymeric material is selected from the group consisting
10 essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

71. The lead electrode assembly of claim 62, wherein the
riser is substantially planar.

72. The lead electrode assembly of claim 62, wherein the
riser is substantially perpendicular to the electrode.

73. The lead electrode assembly of claim 62, wherein the
riser is substantially centered over the electrode.

74. The lead electrode assembly of claim 62, wherein the
25 head is substantially planar.

75. The lead electrode assembly of claim 62, wherein the
head is substantially perpendicular to the riser.

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76. The lead electrode assembly of claim 62, wherein the riser is between approximately 1 mm and approximately 10 mm in height.

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77. The lead electrode assembly of claim 76, wherein the riser comprises a proximal end, a distal end, a top and a bottom and wherein the proximal end is closer to the distal end at the top of the riser than at the bottom of the riser.

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78. The lead electrode assembly of claim 62, wherein the electrode comprises a mesh of metallic material.

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79. The lead electrode assembly of claim 78, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

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80. The lead electrode assembly of claim 62, wherein the electrode comprises a substantially flat sheet of metallic material.

81. The lead electrode assembly of claim 80, wherein the metallic material is selected from the group consisting

5 essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

82. The lead electrode assembly of claim 62, wherein the
electrode is substantially planar.

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83. The lead electrode assembly of claim 62, wherein the
electrode comprises at least one substantially planar surface.

84. The lead electrode assembly of claim 83, wherein the
at least one substantially planar surface has a surface area
between approximately 100 square millimeters and approximately
2000 square millimeters.

85. The lead electrode assembly of claim 62, wherein the
lead electrode assembly further comprises a lead coupled to the
electrode.

86. The lead electrode assembly of claim 85, wherein the
lead comprises one or more electrical conductors electrically
coupled to the electrode.

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5 87. The lead electrode assembly of claim 86, wherein the
lead further comprises an electrically insulating sheath,
enclosing the one or more electrical conductors.

88. The lead electrode assembly of claim 85, wherein the
10 lead electrode assembly further comprises a connector coupled to
the lead.

89. The lead electrode assembly of claim 88, wherein the
connector is electrically coupled to the electrode.

90. The lead electrode assembly of claim 85, wherein the
lead is between approximately 5 cm and approximately 52 cm in
length.

91. The lead electrode assembly of claim 90, wherein the
lead is between approximately 5 cm and approximately 30 cm in
length.

92. The lead electrode assembly of claim 91, wherein the
25 lead is between approximately 10 cm and approximately 20 cm in
length.

5 93. The lead electrode assembly of claim 90, wherein the
lead length is one of a plurality of pre-set lengths.

 94. The lead electrode assembly of claim 93, wherein the
pre-set lengths vary by approximately 10 cm.

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 95. The lead electrode assembly of claim 85, wherein the
lead has a proximal end and a distal end and wherein the
proximal end of the lead is coupled to the electrode.

 96. The lead electrode assembly of claim 95, wherein the
lead electrode assembly further comprises a lead fastener
coupled between the proximal end of the lead and the electrode.

 97. The lead electrode assembly of claim 96, wherein the
riser is coupled to the electrode along an interface line
intersecting the lead fastener.

 98. The lead electrode assembly of claim 96, wherein the
riser is coupled to the electrode along an interface line and
25 wherein the lead is coupled to the lead fastener along a line of
the lead that is substantially parallel to the interface line.

5 99. The lead electrode assembly of claim 98, wherein the interface line and the line of the lead are the same line.

100. The lead electrode assembly of claim 62, wherein the length of the riser is between approximately 2 mm and
10 approximately 6 cm.

101. The lead electrode assembly of claim 62, wherein the length of the riser is less than the length of the electrode.

102. The lead electrode assembly of claim 101, wherein the riser is coupled to the electrode along an interface line and the length of the riser and the length of the electrode are measured along the interface line.

103. The lead electrode assembly of claim 102, wherein the electrode has a proximal end and a distal end and wherein the riser is closer to the proximal end of the electrode than the distal end of the electrode.

25 104. The lead electrode assembly of claim 103, wherein the lead electrode assembly further comprises a lead, wherein the lead is coupled to the electrode closer to the distal end of the electrode than the proximal end of the electrode.

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105. The lead electrode assembly of claim 104, wherein the lead electrode assembly further comprises a lead fastener coupled between the lead and the electrode.

10 106. The lead electrode assembly of claim 62, wherein the lead electrode assembly further comprises a foundation.

107. The lead electrode assembly of claim 106, wherein a top surface of the foundation is coupled to a bottom of the riser.

108. The lead electrode assembly of claim 106, wherein a bottom surface of the foundation is coupled to and faces a top surface of the electrode.

109. The lead electrode assembly of claim 106, wherein the lead electrode assembly further comprises a backing layer coupled between the foundation and the electrode.

25 110. The lead electrode assembly of claim 107, wherein the backing layer comprises a polymeric material.

5 111. The lead electrode assembly of claim 110, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
10 thereof.

112. The lead electrode assembly of claim 106, wherein the
lead electrode assembly further comprises a molded cover coupled
to the foundation and the electrode.

113. The lead electrode assembly of claim 112, wherein the
molded cover at least partially covers a top surface of the
foundation.

114. The lead electrode assembly of claim 112, wherein the
molded cover comprises a skirt that partially covers a bottom
surface of the electrode.

115. The lead electrode assembly of claim 112, wherein the
25 molded cover comprises a polymeric material.

116. The lead electrode assembly of claim 115, wherein the
polymeric material is selected from the group consisting

5 essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

10 117. The lead electrode assembly of claim 106, wherein the
foundation is substantially planar.

118. The lead electrode assembly of claim 106, wherein the
foundation is substantially parallel to the electrode.

119. The lead electrode assembly of claim 106, wherein the
foundation comprises a metallic material.

120. The lead electrode assembly of claim 119, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

121. The lead electrode assembly of claim 106, wherein the
25 foundation comprises a polymeric material.

122. The lead electrode assembly of claim 121, wherein the
polymeric material is selected from the group consisting

5 essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

10 123. A lead electrode assembly for subcutaneous
implantation in a patient's posterior thorax from an incision in
the skin covering the patient's anterior thorax comprising:

an electrode;

a riser coupled to the electrode; and

a head coupled to the riser.

124. The lead electrode assembly of claim 123, wherein the
riser comprises a metallic material.

120 125. The lead electrode assembly of claim 124, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

25 126. The lead electrode assembly of claim 123, wherein the
riser comprises a polymeric material.

5 127. The lead electrode assembly of claim 126, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
10 thereof.

128. The lead electrode assembly of claim 123, wherein the
head comprises a metallic material.

129. The lead electrode assembly of claim 128, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

130. The lead electrode assembly of claim 123, wherein the
head comprises a polymeric material.

131. The lead electrode assembly of claim 130, wherein the
polymeric material is selected from the group consisting
25 essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

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132. The lead electrode assembly of claim 123, wherein the riser is substantially planar.

133. The lead electrode assembly of claim 123, wherein the
10 riser is substantially perpendicular to the electrode.

134. The lead electrode assembly of claim 123, wherein the riser is substantially centered over the electrode.

135. The lead electrode assembly of claim 123, wherein the
5 head is substantially planar.

136. The lead electrode assembly of claim 123, wherein the head is substantially perpendicular to the riser.

137. The lead electrode assembly of claim 123, wherein the riser is between approximately 1 mm and approximately 10 mm in height.

25 138. The lead electrode assembly of claim 137, wherein the riser comprises a proximal end, a distal end, a top and a bottom and wherein the proximal end is closer to the distal end at the top of the riser than at the bottom of the riser.

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139. The lead electrode assembly of claim 123, wherein the electrode comprises a mesh of metallic material.

140. The lead electrode assembly of claim 139, wherein the
10 metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

141. The lead electrode assembly of claim 123, wherein the
5 electrode comprises a substantially flat sheet of metallic
material.

142. The lead electrode assembly of claim 141, wherein the
metallic material is selected from the group consisting
20 essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

143. The lead electrode assembly of claim 123, wherein the
electrode is substantially planar.

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144. The lead electrode assembly of claim 123, wherein the
electrode comprises at least one substantially planar surface.

5 145. The lead electrode assembly of claim 144, wherein the
at least one substantially planar surface has a surface area
between approximately 100 square millimeters and approximately
2000 square millimeters.

10 146. The lead electrode assembly of claim 123, wherein the
lead electrode assembly further comprises a lead coupled to the
electrode.

147. The lead electrode assembly of claim 146, wherein the
lead comprises one or more electrical conductors electrically
coupled to the electrode.

148. The lead electrode assembly of claim 147, wherein the
lead further comprises an electrically insulating sheath,
enclosing the one or more electrical conductors.

149. The lead electrode assembly of claim 146, wherein the
lead electrode assembly further comprises a connector coupled to
the lead.

150. The lead electrode assembly of claim 149, wherein the
connector is electrically coupled to the electrode.

5 151. The lead electrode assembly of claim 146, wherein the
lead is between approximately 5 cm and approximately 52 cm in
length.

152. The lead electrode assembly of claim 151, wherein the
10 lead is between approximately 5 cm and approximately 30 cm in
length.

153. The lead electrode assembly of claim 152, wherein the
lead is between approximately 10 cm and approximately 20 cm in
length.

154. The lead electrode assembly of claim 151, wherein the
lead length is one of a plurality of pre-set lengths.

155. The lead electrode assembly of claim 154, wherein the
pre-set lengths vary by approximately 10 cm.

156. The lead electrode assembly of claim 146, wherein the
lead has a proximal end and a distal end and wherein the
25 proximal end of the lead is coupled to the electrode.

5 157. The lead electrode assembly of claim 156, wherein the
lead electrode assembly further comprises a lead fastener
coupled between the proximal end of the lead and the electrode.

10 158. The lead electrode assembly of claim 157, wherein the
riser is coupled to the electrode along an interface line
intersecting the lead fastener.

159. The lead electrode assembly of claim 157, wherein the
riser is coupled to the electrode along an interface line and
wherein the lead is coupled to the lead fastener along a line of
the lead that is substantially parallel to the interface line.

160. The lead electrode assembly of claim 159, wherein the
interface line and the line of the lead are the same line.

161. The lead electrode assembly of claim 123, wherein the
length of the riser is between approximately 2 mm and
approximately 6 cm.

25 162. The lead electrode assembly of claim 123, wherein the
length of the riser is less than the length of the electrode.

5 163. The lead electrode assembly of claim 162, wherein the
riser is coupled to the electrode along an interface line and
the length of the riser and the length of the electrode are
measured along the interface line.

10 164. The lead electrode assembly of claim 163, wherein the
electrode has a proximal end and a distal end and wherein the
riser is closer to the proximal end of the electrode than the
distal end of the electrode.

15 165. The lead electrode assembly of claim 164, wherein the
lead electrode assembly further comprises a lead, wherein the
lead is coupled to the electrode closer to the distal end of the
electrode than the proximal end of the electrode.

20 166. The lead electrode assembly of claim 165, wherein the
lead electrode assembly further comprises a lead fastener
coupled between the lead and the electrode.

25 167. The lead electrode assembly of claim 123, wherein the
lead electrode assembly further comprises a foundation.

5 168. The lead electrode assembly of claim 167, wherein a
top surface of the foundation is coupled to a bottom of the
riser.

169. The lead electrode assembly of claim 167 wherein a
10 bottom surface of the foundation is coupled to and faces a top
surface of the electrode.

170. The lead electrode assembly of claim 167, wherein the
lead electrode assembly further comprises a backing layer
15 coupled between the foundation and the electrode.

171. The lead electrode assembly of claim 168, wherein the
backing layer comprises a polymeric material.

20 172. The lead electrode assembly of claim 171, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
25 thereof.

5 173. The lead electrode assembly of claim 167, wherein the
lead electrode assembly further comprises a molded cover coupled
to the foundation and the electrode.

10 174. The lead electrode assembly of claim 173, wherein the
molded cover at least partially covers a top surface of the
foundation.

15 175. The lead electrode assembly of claim 173, wherein the
molded cover comprises a skirt that partially covers a bottom
surface of the electrode.

20 176. The lead electrode assembly of claim 173, wherein the
molded cover comprises a polymeric material.

25 177. The lead electrode assembly of claim 176, wherein the
polymeric material is selected from the group consisting
essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

 178. The lead electrode assembly of claim 167, wherein the
foundation is substantially planar.

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179. The lead electrode assembly of claim 167, wherein the foundation is substantially parallel to the electrode.

180. The lead electrode assembly of claim 167, wherein the
10 foundation comprises a metallic material.

181. The lead electrode assembly of claim 180, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

182. The lead electrode assembly of claim 167, wherein the foundation comprises a polymeric material.

183. The lead electrode assembly of claim 182, wherein the polymeric material is selected from the group consisting essentially of a polyurethane, a polyamide, a polyetheretherketone (PEEK), a polyether block amide (PEBA), a polytetrafluoroethylene (PTFE), a silicone, and mixtures
25 thereof.

184. An implantable cardioverter-defibrillator for subcutaneous positioning between the third rib and the twelfth

5 rib within a patient, the implantable cardioverter-defibrillator
comprising:

a housing; and

a lead electrode assembly coupled to the housing,
wherein the lead electrode assembly comprises:

10 an electrode;

a riser coupled to the electrode; and

a head coupled to the riser.

185. The implantable cardioverter-defibrillator of claim
184, wherein the riser comprises a metallic material.

186. The implantable cardioverter-defibrillator of claim
185, wherein the metallic material is selected from the group
consisting essentially of titanium, nickel alloys, stainless
20 steel alloys, platinum, platinum iridium, and mixtures thereof.

187. The implantable cardioverter-defibrillator of claim
184, wherein the riser comprises a polymeric material.

25 188. The implantable cardioverter-defibrillator of claim
187, wherein the polymeric material is selected from the group
consisting essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a

5 polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

189. The implantable cardioverter-defibrillator of claim 184, wherein the head comprises a metallic material.

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190. The implantable cardioverter-defibrillator of claim 189, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

191. The implantable cardioverter-defibrillator of claim 184, wherein the head comprises a polymeric material.

192. The implantable cardioverter-defibrillator of claim 191, wherein the polymeric material is selected from the group consisting essentially of a polyurethane, a polyamide, a polyetheretherketone (PEEK), a polyether block amide (PEBA), a polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

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193. The implantable cardioverter-defibrillator of claim 184, wherein the riser is substantially planar.

5 194. The implantable cardioverter-defibrillator of claim
184, wherein the riser is substantially perpendicular to the
electrode.

10 195. The implantable cardioverter-defibrillator of claim
184, wherein the riser is substantially centered over the
electrode.

196. The implantable cardioverter-defibrillator of claim
184, wherein the head is substantially planar.

197. The implantable cardioverter-defibrillator of claim
184, wherein the head is substantially perpendicular to the
riser.

20 198. The implantable cardioverter-defibrillator of claim
184, wherein the riser is between approximately 1 mm and
approximately 10 mm in height.

25 199. The implantable cardioverter-defibrillator of claim
198, wherein the riser comprises a proximal end, a distal end, a
top and a bottom and wherein the proximal end is closer to the
distal end at the top of the riser than at the bottom of the
riser.

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200. The implantable cardioverter-defibrillator of claim 184, wherein the electrode comprises a mesh of metallic material.

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201. The implantable cardioverter-defibrillator of claim 200, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

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202. The implantable cardioverter-defibrillator of claim 184, wherein the electrode comprises a substantially flat sheet of metallic material.

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203. The implantable cardioverter-defibrillator of claim 202, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

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204. The implantable cardioverter-defibrillator of claim 184, wherein the electrode is substantially planar.

5 205. The implantable cardioverter-defibrillator of claim
184, wherein the electrode comprises at least one substantially
planar surface.

10 206. The implantable cardioverter-defibrillator of claim
205, wherein the at least one substantially planar surface has a
surface area between approximately 100 square millimeters and
approximately 2000 square millimeters.

15 207. The implantable cardioverter-defibrillator of claim
184, wherein the lead electrode assembly further comprises a
lead coupled between the electrode and the housing.

20 208. The implantable cardioverter-defibrillator of claim
207, wherein the lead comprises one or more electrical
conductors electrically coupled to the electrode.

25 209. The implantable cardioverter-defibrillator of claim
208, wherein the lead further comprises an electrically
insulating sheath, enclosing the one or more electrical
conductors.

5 210. The implantable cardioverter-defibrillator of claim
207, wherein the lead electrode assembly further comprises a
connector coupled to the lead.

 211. The implantable cardioverter-defibrillator of claim
10 210, wherein the connector is electrically coupled to the
electrode.

 212. The implantable cardioverter-defibrillator of claim
207, wherein the lead is between approximately 5 cm and
15 approximately 52 cm in length.

 213. The implantable cardioverter-defibrillator of claim
212, wherein the lead is between approximately 5 cm and
approximately 30 cm in length.

 214. The implantable cardioverter-defibrillator of claim
213, wherein the lead is between approximately 10 cm and
approximately 20 cm in length.

25 215. The implantable cardioverter-defibrillator of claim
212, wherein the lead length is one of a plurality of pre-set
lengths.

5 216. The implantable cardioverter-defibrillator of claim
215, wherein the pre-set lengths vary by approximately 10 cm.

 217. The implantable cardioverter-defibrillator of claim
207, wherein the lead has a proximal end and a distal end and
10 wherein the proximal end of the lead is coupled to the
electrode.

 218. The implantable cardioverter-defibrillator of claim
217, wherein the lead electrode assembly further comprises a
15 lead fastener coupled between the proximal end of the lead and
the electrode.

 219. The implantable cardioverter-defibrillator of claim
218, wherein the riser is coupled to the electrode along an
20 interface line intersecting the lead fastener.

 220. The implantable cardioverter-defibrillator of claim
218, wherein the riser is coupled to the electrode along an
interface line and wherein the lead is coupled to the lead
25 fastener along a line of the lead that is substantially parallel
to the interface line.

5 221. The implantable cardioverter-defibrillator of claim
220, wherein the interface line and the line of the lead are the
same line.

 222. The implantable cardioverter-defibrillator of claim
10 184, wherein the length of the riser is between approximately 2
mm and approximately 6 cm.

 223. The implantable cardioverter-defibrillator of claim
184, wherein the length of the riser is less than the length of
15 the electrode.

 224. The implantable cardioverter-defibrillator of claim
223, wherein the riser is coupled to the electrode along an
interface line and the length of the riser and the length of the
20 electrode are measured along the interface line.

 225. The implantable cardioverter-defibrillator of claim
224, wherein the electrode has a proximal end and a distal end
and wherein the riser is closer to the proximal end of the
25 electrode than the distal end of the electrode.

 226. The implantable cardioverter-defibrillator of claim
225, wherein the lead electrode assembly further comprises a

5 lead, wherein the lead is coupled to the electrode closer to the
distal end of the electrode than the proximal end of the
electrode.

227. The implantable cardioverter-defibrillator of claim
10 226, wherein the lead electrode assembly further comprises a
lead fastener coupled between the lead and the electrode.

228. The implantable cardioverter-defibrillator of claim
184, wherein the lead electrode assembly further comprises a
foundation.

229. The implantable cardioverter-defibrillator of claim
228, wherein a top surface of the foundation is coupled to a
bottom of the riser.

230. The implantable cardioverter-defibrillator of claim
228, wherein a bottom surface of the foundation is coupled to
and faces a top surface of the electrode.

25 231. The implantable cardioverter-defibrillator of claim
228, wherein the lead electrode assembly further comprises a
backing layer coupled between the foundation and the electrode.

5 232. The implantable cardioverter-defibrillator of claim
229, wherein the backing layer comprises a polymeric material.

233. The implantable cardioverter-defibrillator of claim
232, wherein the polymeric material is selected from the group
10 consisting essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

234. The implantable cardioverter-defibrillator of claim
228, wherein the lead electrode assembly further comprises a
molded cover coupled to the foundation and the electrode.

235. The implantable cardioverter-defibrillator of claim
234, wherein the molded cover at least partially covers a top
surface of the foundation.

236. The implantable cardioverter-defibrillator of claim
234, wherein the molded cover comprises a skirt that partially
25 covers a bottom surface of the electrode.

237. The implantable cardioverter-defibrillator of claim
234, wherein the molded cover comprises a polymeric material.

5

238. The implantable cardioverter-defibrillator of claim 237, wherein the polymeric material is selected from the group consisting essentially of a polyurethane, a polyamide, a polyetheretherketone (PEEK), a polyether block amide (PEBA), a
10 polytetrafluoroethylene (PTFE), a silicone, and mixtures thereof.

239. The implantable cardioverter-defibrillator of claim 228, wherein the foundation is substantially planar.

240. The implantable cardioverter-defibrillator of claim 228, wherein the foundation is substantially parallel to the electrode.

241. The implantable cardioverter-defibrillator of claim 228, wherein the foundation comprises a metallic material.

242. The implantable cardioverter-defibrillator of claim 241, wherein the metallic material is selected from the group
25 consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

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5 243. The implantable cardioverter-defibrillator of claim
241, wherein the foundation comprises a polymeric material.

244. The implantable cardioverter-defibrillator of claim
243, wherein the polymeric material is selected from the group
10 consisting essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

245. A lead electrode assembly manipulation tool
comprising:

a plurality of tines; and

a rod, wherein the rod is connected to the plurality
of tines.

246. The lead electrode assembly manipulation tool of claim
245, wherein all of the plurality of tines are parallel to each
other.

25 247. The lead electrode assembly manipulation tool of claim
245, wherein each of the plurality of tines is separated from
the others by a gap.

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5 248. The lead electrode assembly manipulation tool of claim
245, wherein each of the plurality of tines comprises an inner
side, an outer side, a proximal end and a distal end, wherein
the inner side of each of the plurality of tines is
substantially straight.

10 249. The lead electrode assembly manipulation tool of claim
248, wherein the outer side of each of the plurality of tines is
substantially straight.

15 250. The lead electrode assembly manipulation tool of claim
248, wherein the distal end of each of the plurality of tines is
rounded.

20 251. The lead electrode assembly manipulation tool of claim
245, wherein the lead electrode assembly manipulation tool
further comprises a tine base, wherein the tine base is
connected to the rod and wherein the tine base is connected to
the plurality of tines.

25 252. The lead electrode assembly manipulation tool of claim
251, wherein each of the plurality of tines has a proximal end
and a distal end and wherein the proximal end of each of the
plurality of tines is attached to the tine base.

5

253. The lead electrode assembly manipulation tool of claim 251, wherein the rod has a proximal end and a distal end and wherein the distal end of the rod is connected to the tine base.

10

254. The lead electrode assembly manipulation tool of claim 253, wherein the lead electrode assembly manipulation tool further comprises a handle connected to the proximal end of the rod.

15

255. The lead electrode assembly manipulation tool of claim 245, wherein the rod is curved.

20

256. The lead electrode assembly manipulation tool of claim 245, wherein the plurality of tines comprise a metallic material.

257. The lead electrode assembly of claim 256, wherein the metallic material is selected from the group consisting essentially of titanium, nickel alloys, stainless steel alloys, platinum, platinum iridium, and mixtures thereof.

5 258. The lead electrode assembly manipulation tool of claim
245, wherein the plurality of tines comprises a polymeric
material.

10 259. The lead electrode assembly manipulation tool of claim
258, wherein the polymeric material is selected from the group
consisting essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

20 260. The lead electrode assembly manipulation tool of claim
245, wherein the rod comprises a metallic material.

25 261. The lead electrode assembly of claim 260, wherein the
metallic material is selected from the group consisting
essentially of titanium, nickel alloys, stainless steel alloys,
platinum, platinum iridium, and mixtures thereof.

30 262. The lead electrode assembly manipulation tool of claim
245, wherein the rod comprises a polymeric material.

35 263. The lead electrode assembly manipulation tool of claim
262, wherein the polymeric material is selected from the group

5 consisting essentially of a polyurethane, a polyamide, a
polyetheretherketone (PEEK), a polyether block amide (PEBA), a
polytetrafluoroethylene (PTFE), a silicone, and mixtures
thereof.

10 264. A method for surgically implanting a lead electrode
assembly subcutaneously outside a patient's ribcage, the method
comprising the steps of:

providing a lead electrode assembly having a lead, a
riser and a head;

15 providing a lead electrode assembly manipulation tool;

creating a subcutaneous path outside the ribcage;

20 capturing the lead electrode assembly with the lead
electrode assembly manipulation tool;

moving the lead electrode assembly through the path;

and

releasing the lead electrode assembly from the lead
electrode assembly manipulation tool.

25 265. The method of claim 264, wherein the step of creating
a subcutaneous path outside the ribcage further comprises the
steps of:

providing a hemostat;

5 creating an incision in the thoracic region of the
patient; and

 creating the subcutaneous path by moving the hemostat
between the ribcage and the skin.

10 266. The method of claim 265, wherein the step of creating
the subcutaneous path by moving the hemostat between the ribcage
and the skin further comprises the step of:

 moving the hemostat laterally and posteriorly around
the side of the patient until the subcutaneous path
terminates at a termination point such that if a straight
15 line were drawn from the incision to the termination point,
the line would intersect the heart of the patient.

20 267. The method of claim 265, wherein the step of creating
the subcutaneous path by moving the hemostat between the ribcage
and the skin further comprises the step of:

 moving the hemostat laterally and posteriorly around
the side of the patient until the subcutaneous path
terminates at a termination point within 10 cm of the spine
25 of the patient between the third and twelfth rib.

 268. The method of claim 265, wherein the incision in the
thoracic region of the patient is in the anterior of the thorax.

5

269. The method of claim 265, wherein the lead electrode assembly manipulation tool comprises a rod coupled to a plurality of tines.

10 270. The method of claim 269, wherein the step of capturing the lead electrode assembly with the lead electrode assembly manipulation tool further comprises the step of:

positioning the riser of the lead electrode assembly between two of the plurality of tines of the lead electrode assembly manipulation tool.

271. The method of claim 269, wherein the step of capturing the lead electrode assembly with the lead electrode assembly manipulation tool further comprises the step of:

holding the lead of the lead electrode assembly still relative to the rod of the lead electrode assembly manipulation tool.

272. The method of claim 269, wherein the step of capturing
25 the lead electrode assembly with the lead electrode assembly manipulation tool further comprises the step of:

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5 holding the lead of the lead electrode assembly
against the rod of the lead electrode assembly manipulation
tool.

273. The method of claim 269, wherein the step of releasing
10 the lead electrode assembly from the lead electrode assembly
manipulation tool further comprises the step of:

allowing the lead of the lead electrode assembly to
move relative to the rod of the lead electrode assembly
manipulation tool.

274. A subcutaneous implantable cardioverter-defibrillator
kit for use in surgically implanting a subcutaneous implantable
cardioverter-defibrillator and a lead electrode assembly within
a patient comprising:

a tray; and

a lead electrode assembly having a riser and a head
stored in the tray.

275. The subcutaneous implantable cardioverter-
25 defibrillator kit of claim 274, wherein the subcutaneous
implantable cardioverter-defibrillator kit further comprises a
lead electrode assembly manipulation tool having a plurality of

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5 times, wherein the lead electrode assembly manipulation tool is stored in the tray.

276. The subcutaneous implantable cardioverter-defibrillator kit of claim 274, wherein the subcutaneous
10 implantable cardioverter-defibrillator kit further comprises a subcutaneous implantable cardioverter-defibrillator, wherein the subcutaneous implantable cardioverter-defibrillator is stored in the tray.

277. The subcutaneous implantable cardioverter-defibrillator kit of claim 274, wherein the subcutaneous
15 implantable cardioverter-defibrillator kit further comprises a medical adhesive, wherein the medical adhesive is stored in the tray.

278. The subcutaneous implantable cardioverter-defibrillator kit of claim 274, wherein the subcutaneous
20 implantable cardioverter-defibrillator kit further comprises an anesthetic, wherein the anesthetic is stored in the tray.

279. The subcutaneous implantable cardioverter-defibrillator kit of claim 274, wherein the subcutaneous
25 implantable cardioverter-defibrillator kit further comprises a

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5 tube of mineral oil, wherein the tube of mineral oil is stored
in the tray.

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